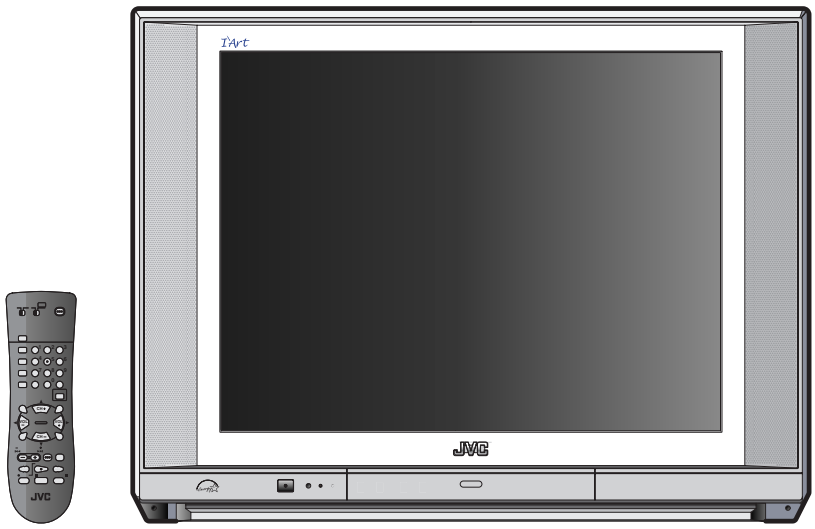
JVC

SERVICE MANUAL

COLOR TELEVISION

AV-14F704



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No. 52130
2003/05

SPECIFICATIONS

TELEVISION

Picture Tube:	14” (measured diagonally)
Color System:	NTSC
TV RF System:	US System M
Tuner Type:	181 Channel, Quartz PLL Frequency Synthesized
Receiving Channels:	VHF 2-13
	UHF 14-69
	CATV 01-97 (5A)-(A-3)
	98-99 (A-2)-(A-1)
	14-22 (A)-(I)
	23-36 (J)-(W)
	37-65 (AA)-(FFF)
	66-125 (GGG)-(125)
Intermediate Frequency:	Picture (FP) : 45.75 MHz
	Sound (FS) : 41.25 MHz
	FP-FS : 4.50 MHz
Antenna Input:	VHF/UHF/CATV In 75 ohms coaxial, F-Type Connector
Speaker:	1-5/8” (4 cm) x 2-13/16” (7 cm), 8 ohms x 2
Audio Output Power:	2.5 W + 2.5 W

GENERAL

Power Source:	120 V AC, 60 Hz
Power Consumption:	80 Watts
Dimensions(W x H x D):	17-1/8” (432 mm) x 13-5/8” (344.5 mm) x 15-1/2” (393.5 mm)
Weight:	26.4 lbs/12 kg
Video/Audio Inputs:	Component input
	Y input: 1.0 Vp-p, 75 ohm (RCA pin jack)
	Pb, Pr input : 0.7 Vp-p, 75 ohm (RCA pin jack)
	S-Video input
	Y input: 1.0 Vp-p, 75 ohm
	C input: 0.3 Vp-p, 75 ohm
	Video input: 1.0 Vp-p, 75 ohm (RCA pin jack)
	Audio input: -8dB, 47 kohm (RCA pin jack)
Headphone Jack:	3.5 mm mini-jack
Storage Temperature	-20 ºC ~ 60 ºC
Operating Temperature	5 ºC ~ 40 ºC

Accessories:

Remote Control X 1
Batteries (UM-3) X 2

Design & specification are subject to change without notice.

SAFETY PRECAUTIONS

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.

Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts.

Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathoderay tube is set in this equipment, safety is secured against implosion.

However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc. Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.

Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathoderay tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the eternal exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER
   The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

IMPORTANT

Inferior silicon grease can damage IC's and transistors.
When replacing an IC's or transistors, use only specified silicon grease (YG6260M).
Remove all old silicon before applying new silicon.

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 1-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground.
   While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.
   A cracking noise will be heard as the voltage is discharged.

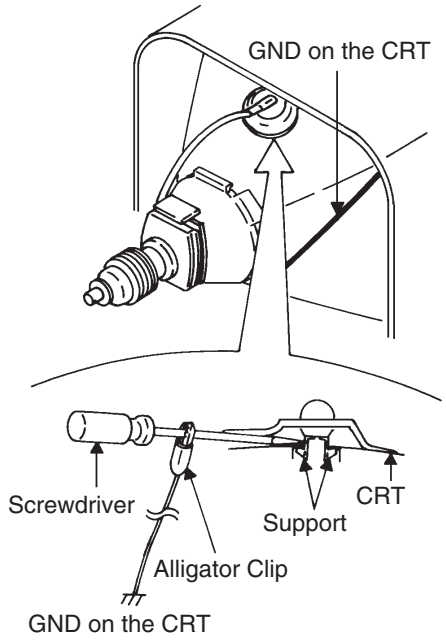


Fig. 1-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 1-2.)**

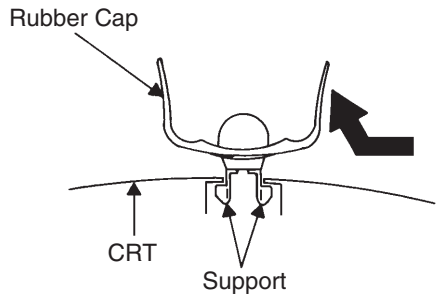


Fig. 1-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 1-3.)**

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

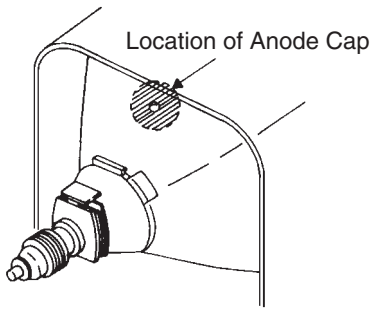


Fig. 1-3

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 1-4.)**

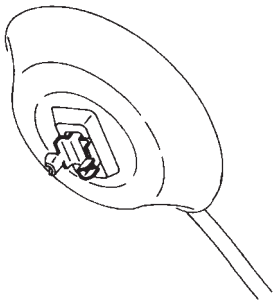


Fig. 1-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 1-5**.

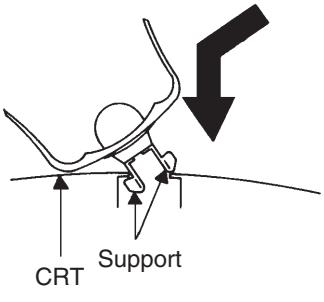


Fig. 1-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

2. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage.
   (Refer to Fig. 2-1.)

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

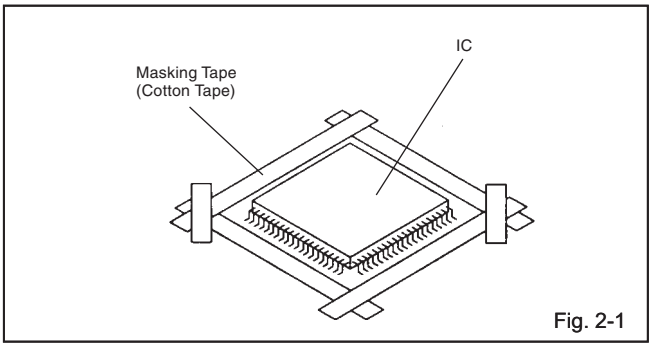


Fig. 2-1

2. Heat the IC leads using a blower type IC desoldering machine.
   (Refer to Fig. 2-2.)

   NOTE

   Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.

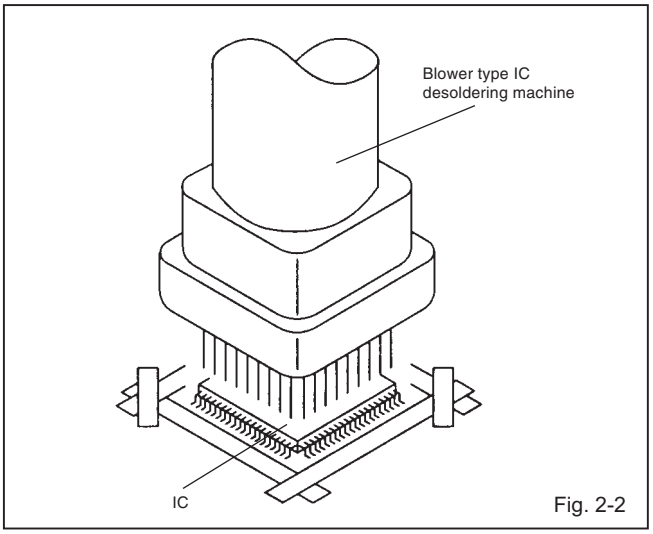


Fig. 2-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine.
   (Refer to Fig. 2-3.)

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

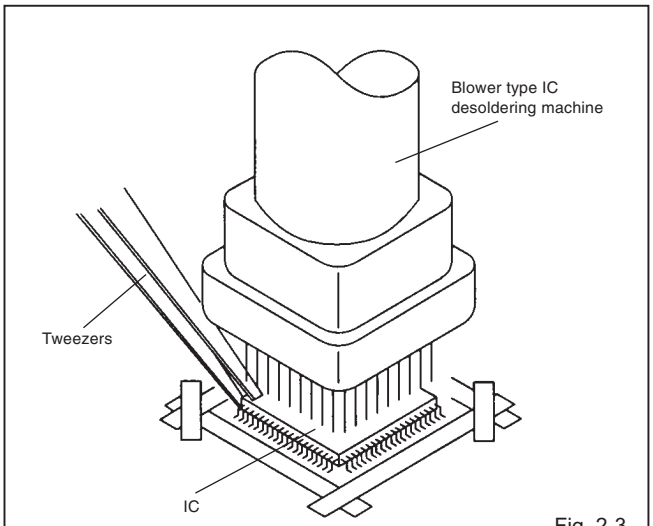


Fig. 2-3

4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 2-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

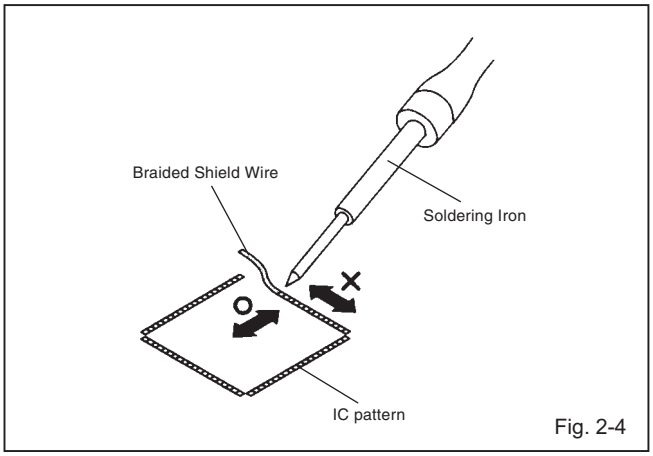


Fig. 2-4

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily.
   (Refer to Fig. 2-5.)

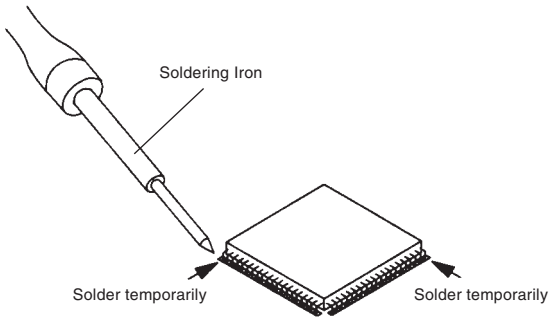


Fig. 2-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads.
   (Refer to Fig. 2-6.)

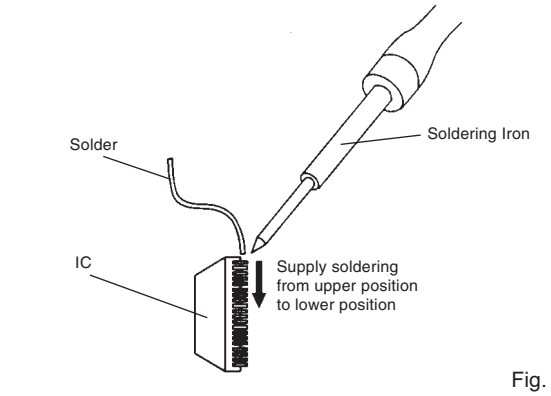


Fig. 2-6

3. Absorb the solder left on the lead using the Braided Shield Wire.
   (Refer to Fig. 2-7.)

   NOTE

   Do not absorb the solder to excess.

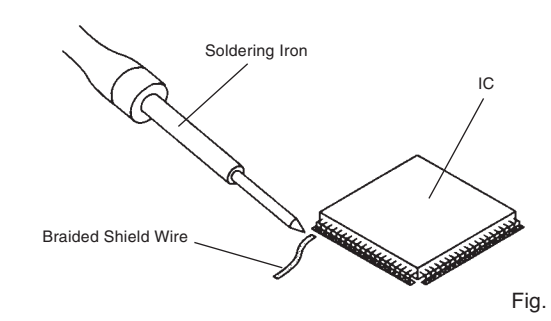


Fig. 2-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thintip Soldering Iron.
   (Refer to Fig. 2-8.)

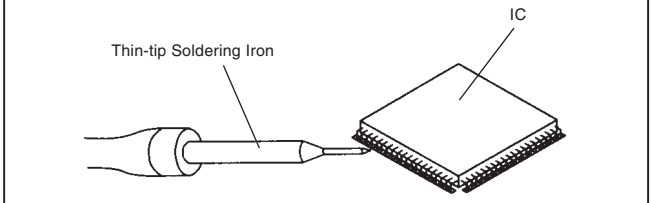


Fig. 2-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
   Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

   NOTE

   When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.
To enter the Service Mode, press both set key and remote control key for more than 1 second.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the channel setting, and the POWER ON total hours.
VOL. (-) MIN	3	Remocon format selection. (JVC format → NEC format) NOTE: Supplied remocon can not be operated at NEC format. (The "N" is always displayed on the monitor.) Do not use this for the normal servicing.
VOL. (-) MIN	6	POWER ON total hours is displayed on the screen. Refer to the "CONFIRMATION OF HOURS USED". Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

CONFIRMATION OF HOURS USED

POWER ON total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second.
3. After the confirmation of using hours, turn off the power.

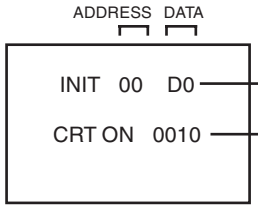


FIG. 1

Initial setting content of MEMORY IC.

POWER ON total hours.
= (16 x 16 x 16 x thousands digit value)
+ (16 x 16 x hundreds digit value)
+ (16 x tens digit value)
+ (ones digit value)

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: No need setting for after INI 1F due to the adjustment value.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	D0	E8	02	64	5E	B3	24	37	39	AC	00	04	40	40	40	7F
10	50	00	00	00	00	16	06	99	28	0F	0D	C2	A6	88	43	00

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second. ADDRESS and DATA should appear as FIG 1.
3. ADDRESS is now selected and should "blink". Using the VOL. +/- button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using VOL. +/- button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input. **After the data input, set to the initializing of shipping.**
9. Turn on the POWER.
10. Press both VOL. DOWN button on the set and Channel button **(1)** on the remote control for more than 1 second.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

SERVICE ADJUSTMENTS

ELECTRICAL ADJUSTMENTS

1. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor for a heat sink, apply the silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. Multi-Sound Signal Generator
4. Pattern Generator

On-Screen Display Adjustment

1. In the condition of NO indication on the screen.
   Press the VOL. DOWN button on the set and the Channel button **(9)** on the remote control for more than 1 second to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

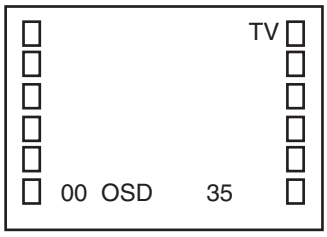


Fig. 1-1

3. Use the Channel UP/DOWN button or Channel button **(0-9)** on the remote control to select the options shown in **Fig. 1-2**.
4. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	18	CONTRAST MAX
01	CUT OFF	19	CONTRAST CENT
02	H. VCO	20	CONTRAST MIN
03	H. PHASE	21	COLOR MAX
04	AFC GAIN	22	COLOR CENT
05	V. SHIFT	23	COLOR MIN
06	H. SIZE	24	TINT
07	V. SIZE	25	SHARPNESS
08	V. LINEARITY	26	Cb DELAY FINE
09	VS CORRECTION	27	Cr DELAY FINE
10	DRIVE R	28	Cb PEDESTAL ADJ
11	DRIVE B	29	Cr PEDESTAL ADJ
12	R CUT OFF	30	E/W PARABOLA
13	G CUT OFF	31	E/W CORNER
14	B CUT OFF	32	E/W TRAPEZIUM
15	BRIGHT MAX	33	LEVEL
16	BRIGHT CENT	34	SEPARATION1
17	BRIGHT MIN	35	SEPARATION2

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CONSTANT VOLTAGE

1. Place the set with Aging Test for more than 5 minutes.
2. Set condition is AV MODE without signal.
3. Connect the digital voltmeter to the **TP003**.
4. Adjust the **VR502** until the DC voltage is 115 ± 1V.

2-2: CUT OFF

1. Place the set with Aging Test for more than 15 minutes.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(01)** on the remote control to select “CUT OFF”.
3. Adjust the **Screen Volume** until a dim raster is obtained.

2-3: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 10 minutes.
2. Receive the gray scale pattern from the Pattern Generator.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(12)** on the remote control to select “R. BIAS”.
5. Press the CH. UP/DOWN button on the remote control toselect the “R. BIAS”, “G. BIAS”, “B. BIAS”, “B. DRIVE” or “G. DRIVE”.
6. Adjust the VOL. UP/DOWN button on the remote control to whiten the R. BIAS, G. BIAS, B. BIAS, B. DRIVE, and G. DRIVE at each step tone sections equally.
7. Perform the above adjustments 5 and 6 until the white color is looked like a white.

2-4: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the Focus Volume until picture is distinct.

2-5: HORIZONTAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(03)** on the remote control to select "H.PHASE".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

2-6: VERTICAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Adjust the **VR401** until the horizontal line becomes fit to the notch of the shadow mask.

2-7: VERTICAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(07)** on the remote control to select “V. SIZE”.
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes 9 ± 2%.

2-8: VERTICAL LINEARITY

NOTE: Adjust after performing adjustments in section 2-7.
After the adjustment of Vertical Linearity, reconfirm the Vertical Position and Vertical Size adjustments.

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(08)** on the remote control to select “V. LIN”.
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

2-9: LEVEL

1. Receive the VHF HIGH (70dB).
2. Connect the AC voltmeter to the **pin 6 of CP101**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(33)** on the remote control to select “LEVEL”.
4. Press the VOL. UP/DOWN button on the remote control until the AC voltmeter is 75 ± 2mV.

2-10: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum.
(Refer to Fig. 2-1)

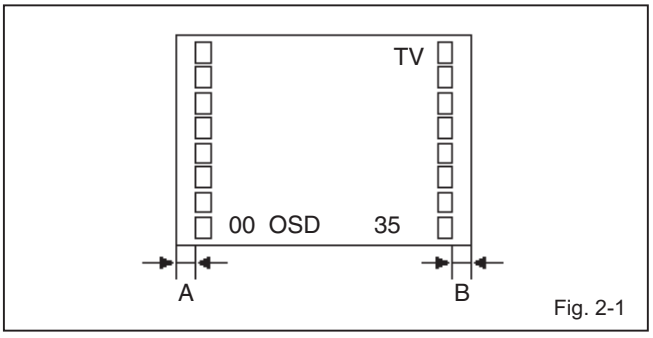


Fig. 2-1

2-11: SEPARATION 1, 2

Please do the method (1) or method (2) adjustment.

Method (1)

1. Set the multi-sound signal generator for each different Lch and R-ch frequency (Ex. L-ch=2KHz, R-ch=400Hz) and receive the RF.
2. Connect the oscilloscope to the **Audio Out Jack**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(34)** on the remote control to select “SEP1”.
4. Press the VOL. UP/DOWN button on the remote control to adjust it until the audio output wave becomes a fine sine wave.
5. Press the CH UP button once the set to “SEP 2” mode. Then perform the above adjustment 4.

Method (2)

1. Set the multi-sound signal generator L-ch=1KHz, R-ch =Non input and receive the RF.
2. Connect the oscilloscope to the **Audio Out Jack (R-ch)**.
3. Press the AUDIO SELECT button on the remote control to set to the stereo mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(34)** on the remote control to select “SEP 1”.
5. Press the VOL. UP/DOWN button on the remote control to adjust it until the R-ch output becomes minimum.
6. Set the multi-sound signal generator L-ch=Non input, R-ch=1KHz and receive the RF.
7. Connect the oscilloscope to the **Audio Out Jack (L-ch)**.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(35)** on the remote control to select “SEP 2”.
9. Press the VOL. UP/DOWN button on the remote control to adjust it until the L-ch output becomes minimum.

2-12: BRIGHT CENTER

1. Receive the monoscope pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(16)** on the remote control to select “BRI. CENT”.
4. Press the VOL. UP/DOWN button on the remote control until the white 15% is starting to be visible.
5. Receive the monoscope pattern. (Audio Video Input)
6. Press the TV/VCR button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.
7. Press the TV/VCR button on the remote control to set to the CS mode.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(16)** on the remote control to select “BRI. CENT”.
9. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV.

2-13: TINT/COLOR CENT

1. Receive the color bar pattern. (RF Input)
2. Connect the oscilloscope to **TP024**.
3. Using the remote control, set the brightness, contrast, color and tint to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(24)** on the remote control to select “TINT”.
5. Press the VOL. UP/DOWN button on the remote control until the section “A” becomes a straight line **(Refer to Fig. 2-2)**.
6. Connect the oscilloscope to **TP023**.
7. Press the CH DOWN button 2 times to set to “COL. CENT” mode.
8. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4.4 scales on the screen of the oscilloscope.
9. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 115 ± 10% of the white level. **(Refer to Fig. 2-3)**
10. Receive the color bar pattern. (Audio Video Input)
11. Press the TV/VCR button on the remote control to set to the AV mode. Then perform the above adjustments 2~9.
12. Press the TV/VCR button on the remote control to set to the CS mode.
13. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(24)** on the remote control to select “TINT”.
14 Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV.
15. Press the CH DOWN button 2 times to set to “COL.CENT” mode.
16. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV.

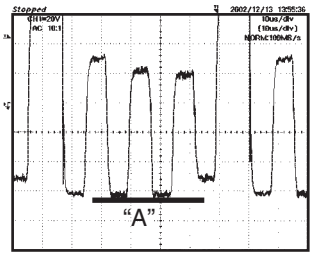


Fig. 2-2

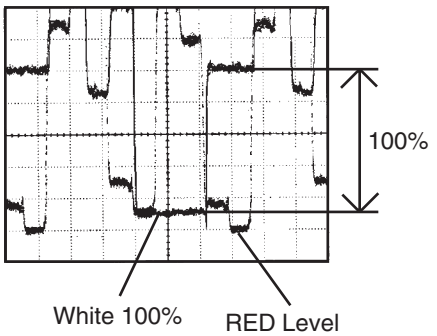


Fig. 2-3

2-14: CONTRAST MAX MANUAL

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(18)** on the remote control to select “CONT. MAX”.
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes “89”.
3. Receive a broadcast and check if the picture is normal.
4. Press the TV/VCR button on the remote control to set to the AV mode. Then perform the above adjustments 1~3.
5. Press the TV/VCR button on the remote control to set to the CS mode.
6. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(18)** on the remote control to select “CONT. MAX”.
7. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes “72”.

2-15: Confirmation of Fixed Value (step No.)

Please check if the fixed values of the each adjustment items are set correctly referring below.

NO.	FUNCTION	RF/AV/CS
02	H. VCO	03
04	AFC GAIN	06
05	V. SHIFT	00
06	H. SIZE	00
09	VS CORRECTION	42
15	BRIGHT MAX	150
17	BRIGHT MIN	75
19	CONTRAST CENT	50
20	CONTRAST MIN	18
21	COLOR MAX	90
23	COLOR MIN	00
25	SHARPNESS	35
26	Cb DELAY FINE	00
27	Cr DELAY FINE	00
28	Cb PEDESTAL ADJ	08
29	Cr PEDESTAL ADJ	08
30	E/W PARABOLA	31
31	E/W CORNER	31
32	E/W TRAPEZIUM	31

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue color.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

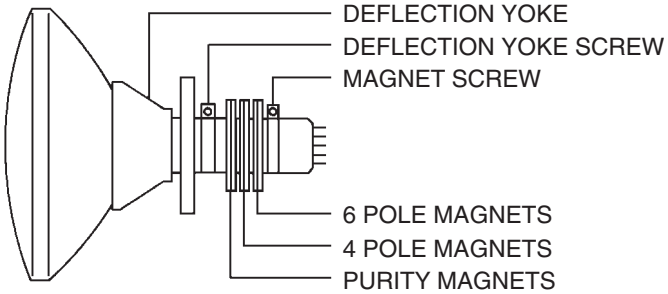


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left.
   (Refer to Fig. 3-2-a)
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke.
   (Refer to Fig. 3-2-b)

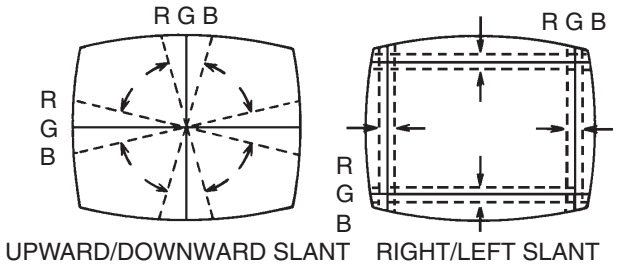


Fig. 3-2-a

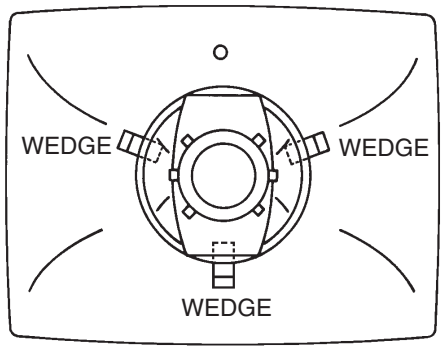
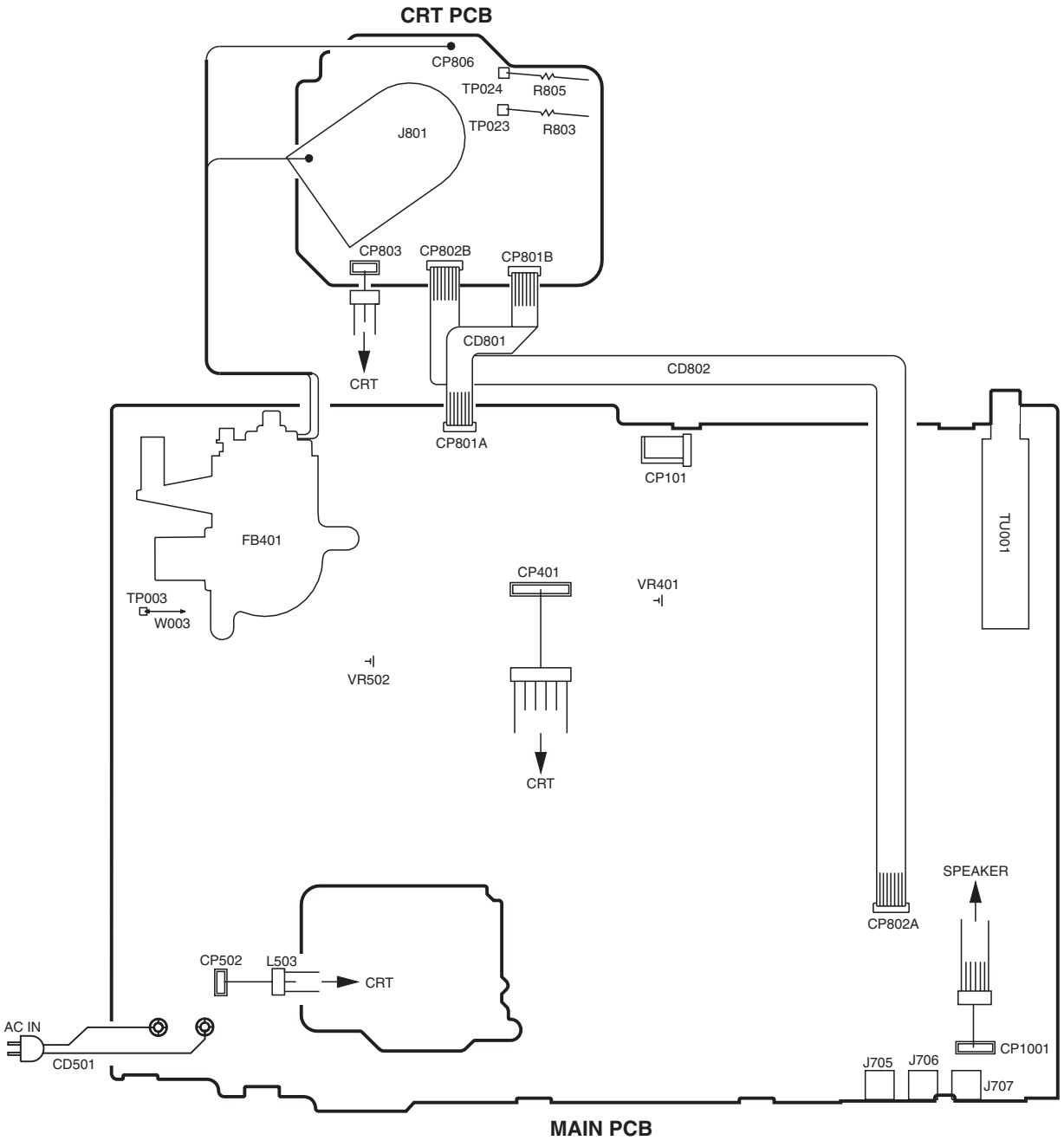


Fig. 3-2-b

4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



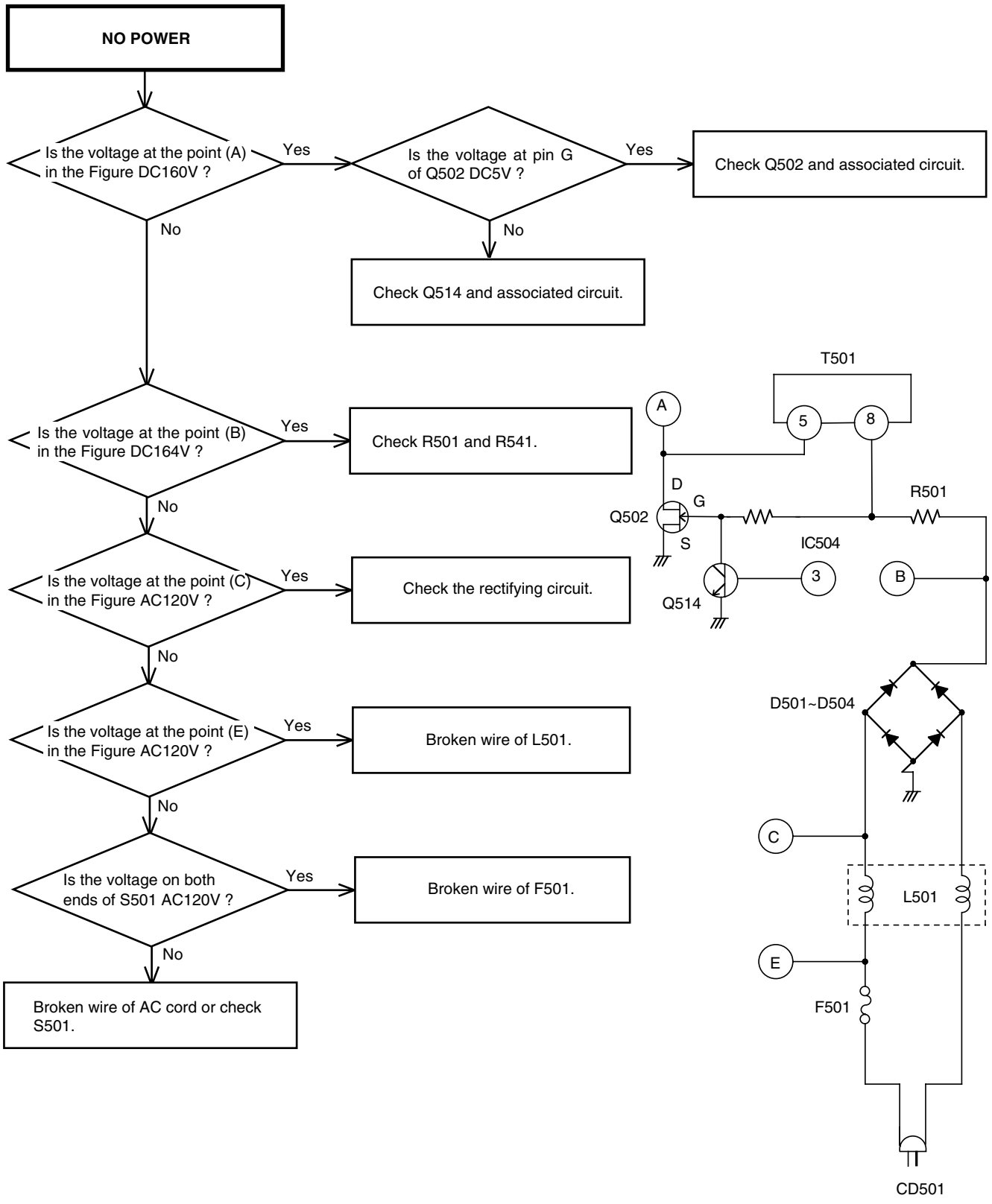
GUIDE FOR REPAIRING

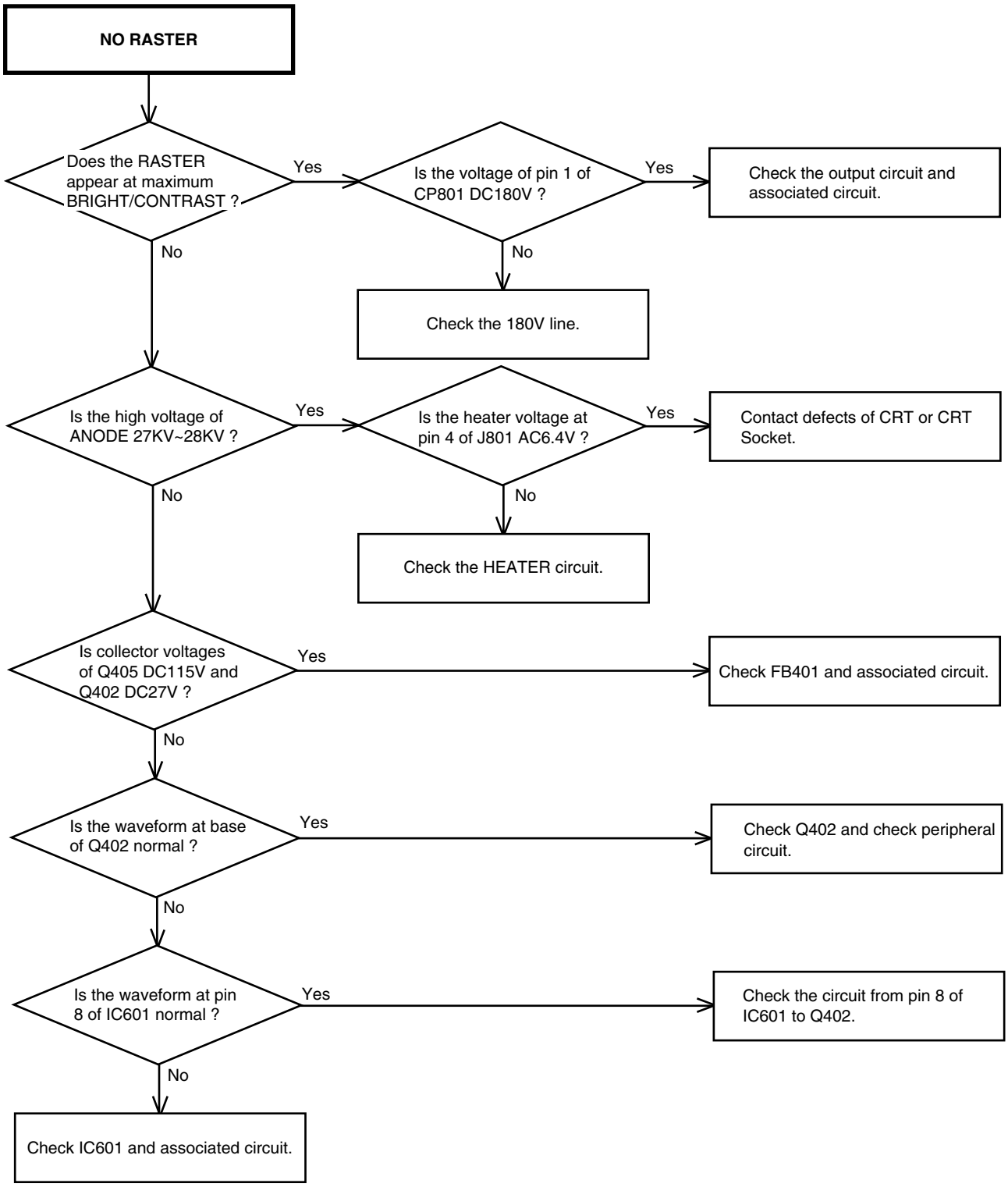
IC DESCRIPTION

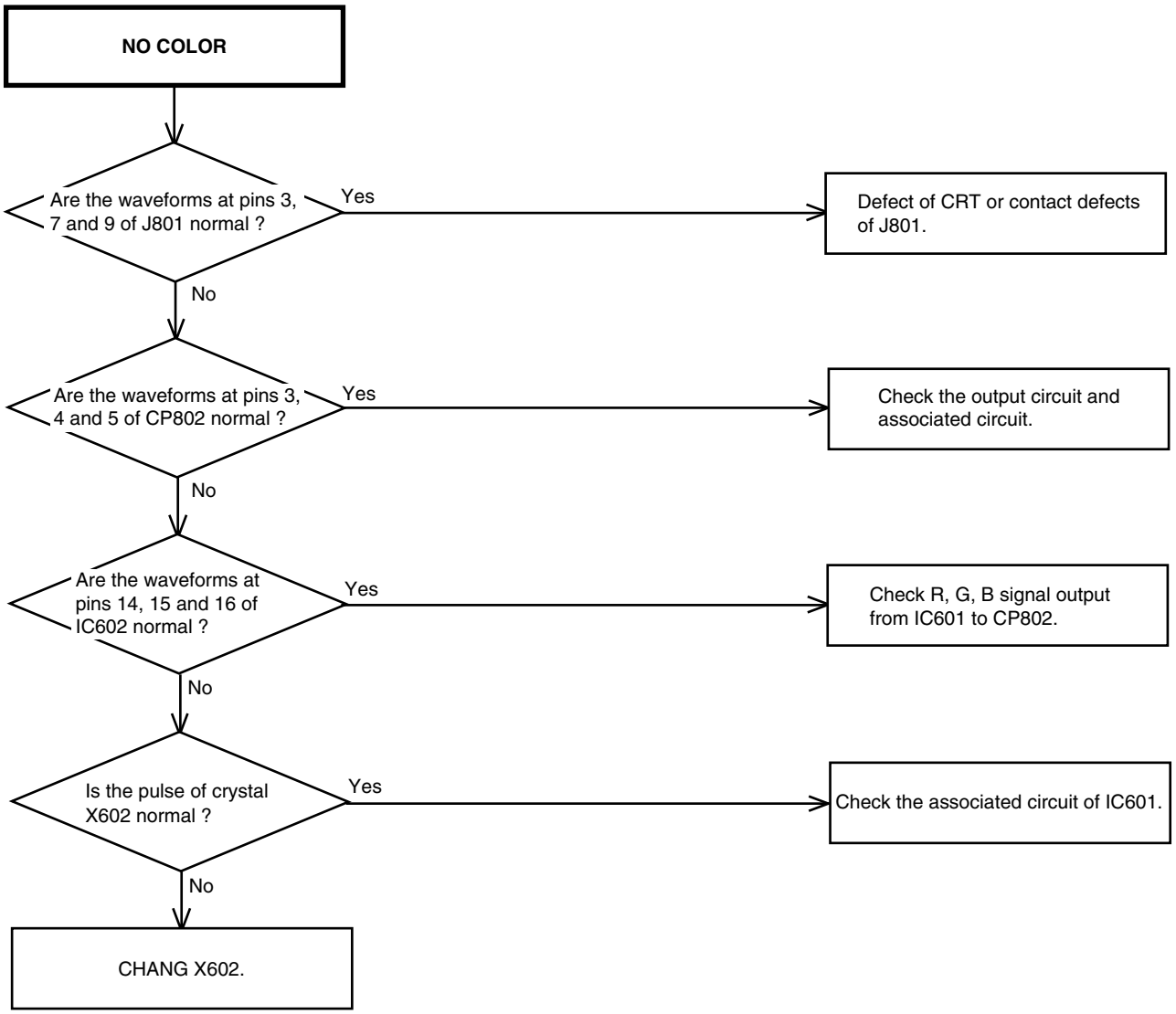
MAIN PCB OEC7093A (IC101)

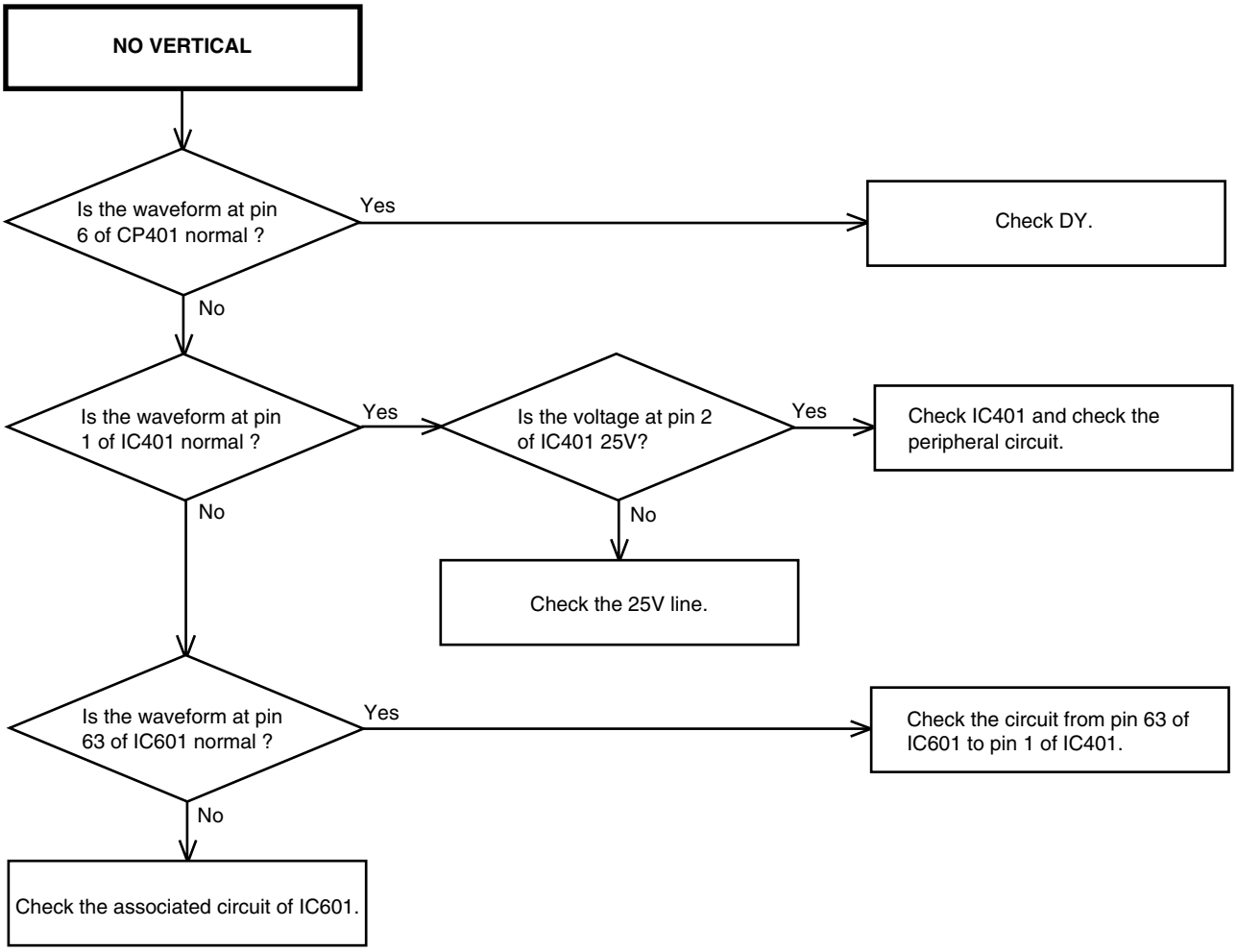
No.	Pin name	Symbol	I/O	Logic	Function	Option
1	P11/SCL1	AUDIO MUTE	O	0	Audio MUTE Output.	C-MOS
2	P00/PWM0	EXT MUTE	O	1	Audio MUTE Output for external Output.	Nch-OD
3	P01/PWM1	VOLUME	O	1	Volume PWM output.	Nch-OD
4	P02/PWM2	BBE-H	O		BBE Control Output.	Nch-OD
5	P03/PWM3/AD1	AFT	I		Voltage of tuning input.	Nch-OD
6	P04/PWM4/AD2	KEY1	I		Main unit key input.	Nch-OD
7	P05/AD3	KEY2	I		Main unit key input.	Nch-OD
8	P06/INT2/AD4	X-RAY	I		Input terminal of X-RAY detection.	Nch-OD
9	P07/INT1	REMOCON	I		Remote control input.	Nch-OD
10	P20/SCLK/AD5	ON TIME LED	O		ON-TIMER LED control output.	C-MOS
11	P21/AOUT/AD6	S IN	I		S-connectio input.	C-MOS
12	P22/SIN/AD7	Y/C SW	O		External in select output.	C-MOS
13	P23/TIM3	AUDIO SW	O		Audio in select output.	C-MOS
14	P24/TIM2		O			C-MOS
15	P25/INT3	OPOWER FAIL	I	0	Power failure detector input.	C-MOS
16	P26/X CIN	DEGAUSS_H	O	1	Degauss output.	C-MOS
17	P27/X COUT	X-RAY_TEST	O	1	X-RAY detector input.	C-MOS
18	CNVSS	CNVSS			GND	
19	XIN	X in	I		Main Oscillation.	
20	XOUT	X out	O		Main Oscillation.	
21	VSS	VSS			GND	
22	VCC	VCC			5V	
23	FILT	FILT				
24	HLF	HLF	O		Filter of slicer.	
25	VHOLD	V.HOLD	I		Condenser of slicer.	
26	CVIN	CVIN	I		Video signal input.	
27	RESET	RESET	I	0	Reset signal input.	
28	FSCIN	(FSC IN)	I		(Main Clock Occurrence circuit input)	
29	PON CONT/P15	POWER	O	1	Power control output.	C-MOS
30	P31/SCL3	SCL1	O		Serial clock output. (IIC BUS)	C-MOS
31	P30/SDA3	SDA1	I/O		Serial data input/output.	C-MOS
32	CLK CONT/P10	(CLOCK CONT)	O		(Main Clock Request output)	C-MOS
33	P55/OUT	BRANK	O	1	BLANK Output for OSD/CCD.	C-MOS
34	P54/R	RED R	O	1	Red output of RGB image output.	C-MOS
35	P53/G	GREEN G	O	1	Green output of RGB image output.	C-MOS
36	P52/B	BLUE B	O	1	Blue output of RGB image output.	C-MOS
37	P51/VSYNC	V.SYNC	I	0	Vertical synchronization input.	
38	P50/HSYNC	H.SENC	I	0	Horizontal synchronization input.	
39	P16/AD8/TIM2	SYNC	I		Input terminal for H-SYNC.	C-MOS
40	P14/SDA2	IIC_OFF	I	0	Serial clock/data stop input.	C-MOS
41	P13/SDA1	PROTECT	O	1	Output HIGH at turning off a television.	C-MOS
42	P12/SCL2	H_CTL	O	1	Output HIGH at turning off a television.	C-MOS

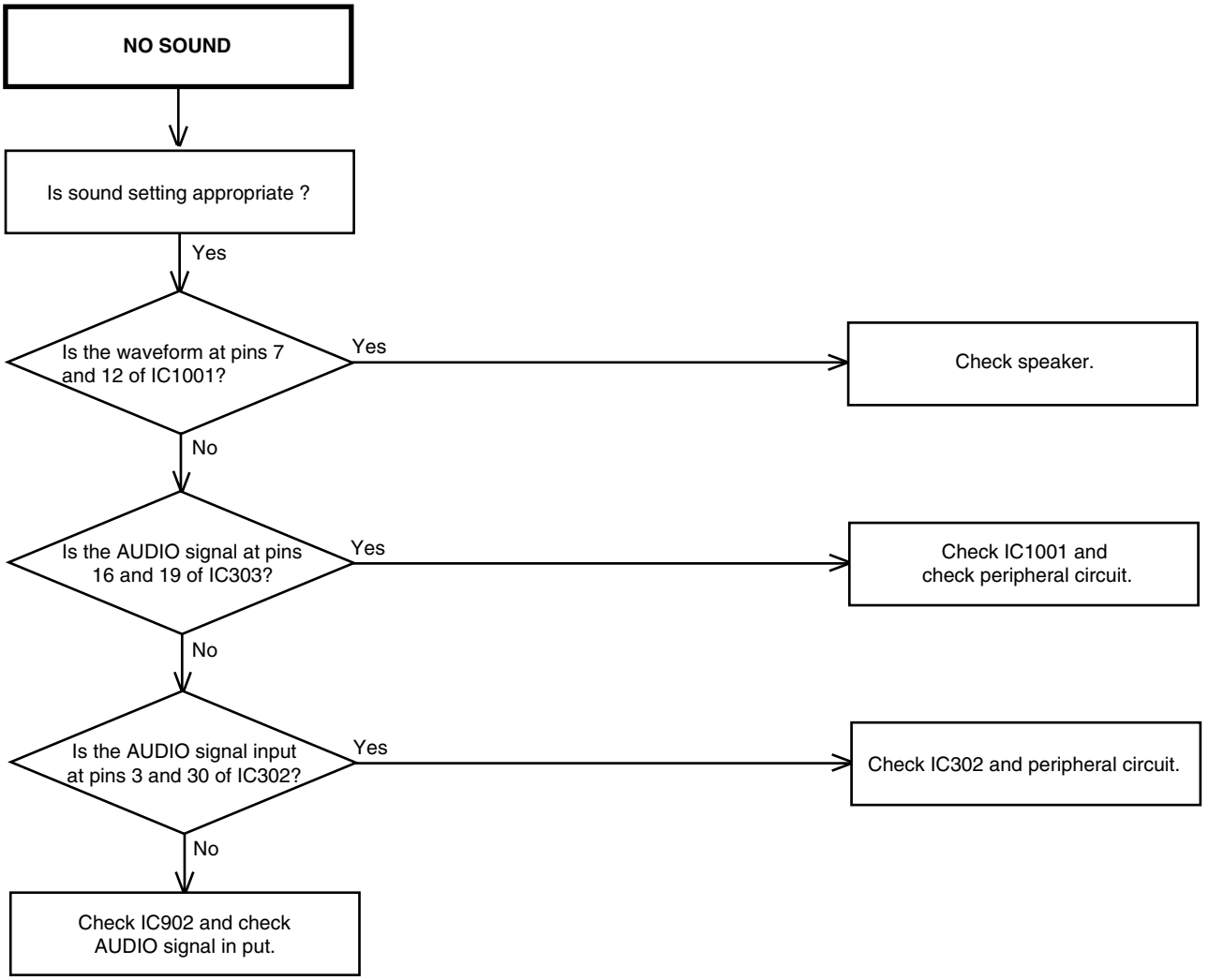
TROUBLESHOOTING GUIDE

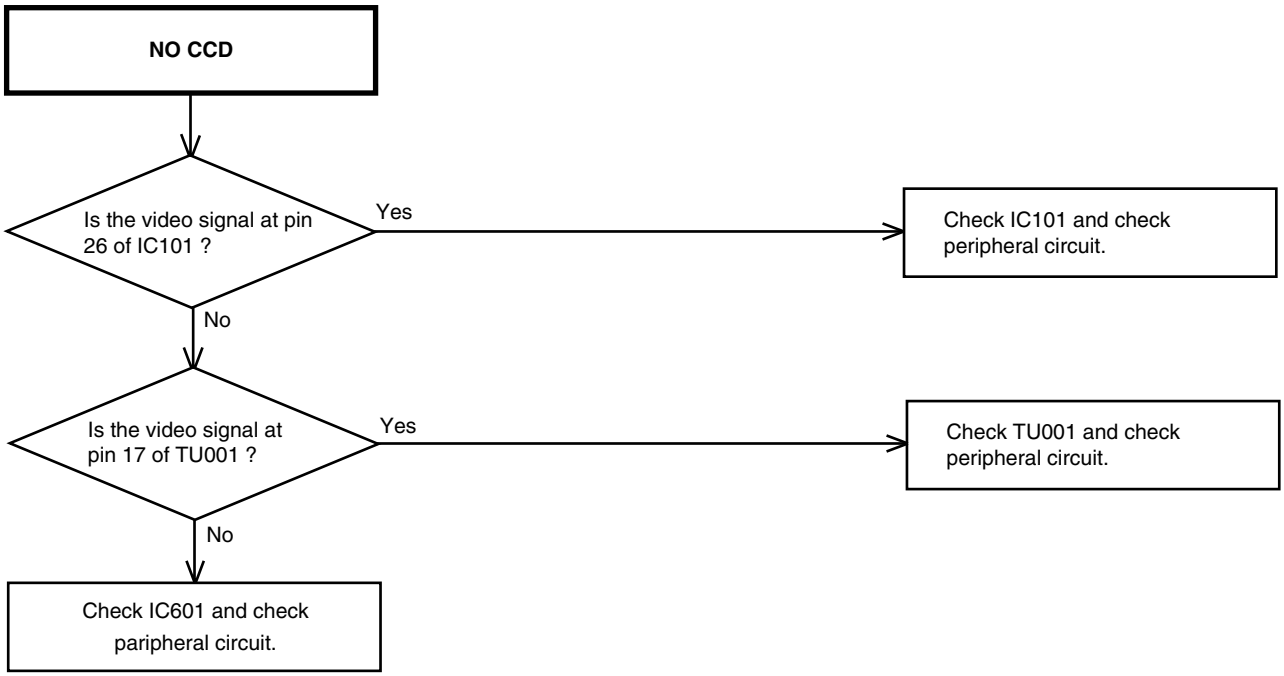



NO RASTER
Does the RASTER appear at maximum BRIGHT/CONTRAST ?
Yes
Is the voltage of pin 1 of CP801 DC180V ?
Yes
Check the output circuit and associated circuit.
No
No
Check the 180V line.
Is the high voltage of ANODE 27KV~28KV ?
Yes
Is the heater voltage at pin 4 of J801 AC6.4V ?
Yes
Contact defects of CRT or CRT Socket.
No
No
Check the HEATER circuit.
Is collector voltages of Q405 DC115V and Q402 DC27V ?
Yes
Check FB401 and associated circuit.
No
Is the waveform at base of Q402 normal ?
Yes
Check Q402 and check peripheral circuit.
No
Is the waveform at pin 8 of IC601 normal ?
Yes
Check the circuit from pin 8 of IC601 to Q402.
No
Check IC601 and associated circuit.


NO COLOR
Are the waveforms at pins 3, 7 and 9 of J801 normal ?
Yes
Defect of CRT or contact defects of J801.
No
Are the waveforms at pins 3, 4 and 5 of CP802 normal ?
Yes
Check the output circuit and associated circuit.
No
Are the waveforms at pins 14, 15 and 16 of IC602 normal ?
Yes
Check R, G, B signal output from IC601 to CP802.
No
Is the pulse of crystal X602 normal ?
Yes
Check the associated circuit of IC601.
No
CHANG X602.


NO VERTICAL
Is the waveform at pin 6 of CP401 normal ?
Yes
Check DY.
No
Is the waveform at pin 1 of IC401 normal ?
Yes
Is the voltage at pin 2 of IC401 25V?
Yes
Check IC401 and check the peripheral circuit.
No
No
Check the 25V line.
Is the waveform at pin 63 of IC601 normal ?
Yes
Check the circuit from pin 63 of IC601 to pin 1 of IC401.
No
Check the associated circuit of IC601.


NO SOUND
Is sound setting appropriate ?
Yes
Is the waveform at pins 7 and 12 of IC1001?
Yes
Check speaker.
No
Is the AUDIO signal at pins 16 and 19 of IC303?
Yes
Check IC1001 and check peripheral circuit.
No
Is the AUDIO signal input at pins 3 and 30 of IC302?
Yes
Check IC302 and peripheral circuit.
No
Check IC902 and check AUDIO signal in put.


NO CCD
Is the video signal at pin 26 of IC101 ?
Yes
Check IC101 and check peripheral circuit.
No
Is the video signal at pin 17 of TU001 ?
Yes
Check TU001 and check peripheral circuit.
No
Check IC601 and check paripheral circuit.

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